

REMARKS

Applicants have the following response to the Office Action. Applicants thank the Examiner for his time and work during the interview of December 5, 2007.

Amendments To Claims

In order to advance the prosecution of this application and based on the interview, Applicants are amending independent Claims 26-28 and 30-34 (and canceling dependent Claims 67-82) to recite the features of “a gate electrode formed over the substrate, the gate electrode comprising aluminum;” and “a pixel electrode over the first insulating layer, the pixel electrode comprising indium, zinc and oxygen.”

Applicants had previously included these features in the independent claims in Amendment J filed on October 10, 2006. In response to this prior amendment, in the Final Rejection of April 27, 2007, the Examiner admitted that Shin did not disclose that the gate electrode can comprise aluminum and that the pixel electrode can comprise indium, zinc and oxygen. The Examiner, however, argued that Hayashi disclosed that aluminum is one of the most commonly used materials for forming the gate electrode and In-Zn-O is one of the most commonly used materials for forming the pixel electrode. The Examiner then concluded that it would have been obvious for one of ordinary skill in the art to “incorporate the art-commonly-used Al-gate electrode and Ti-Zn-O pixel electrode, such as the ones of Hayashi, into the device of Shin...” The Examiner further stated that “it would have been obvious to one of ordinary skill in the art at the time of the invention was made to make the above semiconductor device collectively taught by Shin and Hayashi...”

In the current Office Action, the Examiner appears to be repeating this rejection for

dependent Claims 67-74 (which contained these features and which have now been canceled, without prejudice or disclaimer, as these features are now included in the independent claims).

As explained below, Applicants respectfully disagree with the Examiner's rejection and contentions.

Additionally, in order to advance the prosecution of this application, Applicants are amending independent Claims 26-28 and 30-34 to recite the feature of "wherein the first layer of the input terminal portion directly connects the second layer of the input terminal portion." This feature is supported by, for example, Fig. 2B(II) which shows layer 104 (i.e. the first layer) in direct contact with layer 119 (i.e. the second layer) in the input terminal portion.

As explained, for example, on page 19, lines 4-13 of the specification of the present application, by having the transparent electrically conductive film (119, the second layer) of the input terminal formed of indium zinc oxide, the etching property is improved, and when this second layer (119) is in direct contact with aluminum film (104, the first layer) of the input terminal, improvements in heat stability are achieved and corrosion prevented.

Claim Rejections - 35 USC §103

In the Office Action, the Examiner states that Claims 26-28, 30-50 and 67-94 are rejected under 35 USC §103(a) as being unpatentable over Shin (US 5,825,449) in view of Taguchi et al. (US 6,121,632) and/or Kwasnick et al. (US 5,198,694). However, in discussing Claims 67-74, the Examiner relies upon Hayashi (US 6,094,248) as the Examiner admits that Shin does not disclose the features of these claims (Taguchi and Kwasnick also do not appear to disclose both of these claimed features). This rejection is respectfully traversed.

As explained above, in order to advance the prosecution of this application, Applicants are amending independent Claims 26-28 and 30-34 to recite the features of “a gate electrode formed over the substrate, the gate electrode comprising aluminum;” and “a pixel electrode over the first insulating layer, the pixel electrode comprising indium, zinc and oxygen.” Applicants are also amending Claims 26-28 and 30-34 to recite the feature of “wherein the first layer of the input terminal portion directly connects the second layer of the input terminal portion.”

In addition, it is noted that independent Claims 26-28 and 30-34 also recite the feature of “the input terminal portion comprises a first layer comprising the same material as the gate electrode and a second layer comprising the same material as the pixel electrode.”

Hayashi does not appear to disclose an input terminal portion. Therefore, Hayashi cannot disclose or suggest an input terminal portion comprising a first layer comprising aluminum (same material as gate electrode) and a second layer comprising indium, zinc and oxygen (the same material as the pixel electrode), as in the claims of the present application.

In addition, none of the references appear to disclose or suggest a first layer of the input terminal comprising aluminum directly connected to a second layer of the input terminal comprising indium, zinc and oxygen, as in independent Claims 26-28 and 30-34. As explained above, Applicants have discovered that this feature is highly advantageous.

Further, Applicants do not believe that there is any reason provided in the cited art for one skilled in the art to have the first layer of the input terminal comprise aluminum and the second layer comprise indium, zinc and oxygen, and to directly connect these layers. For example, Hayashi does not disclose such an input terminal nor a connection between a layer of aluminum and a layer of indium, zinc and oxygen.

Further, Applicants respectfully submit that it would not have been obvious to combine Shin and Hayashi to arrive at the claimed invention. For example, the process for making a TFT in Shin is very different and has a number of different steps than that in Hayashi. As a result, one skilled in the art would not combine the two processes of these references.

Therefore, independent Claims 26-28 and 30-34 are not disclosed or suggested by the cited references, and Claims 26-28 and 30-34 and those claims dependent thereon are patentable over these references. Accordingly, it is respectfully requested that this rejection be withdrawn.

Information Disclosure Statement

Applicants are submitting an information disclosure statement (IDS) herewith. It is respectfully requested that this IDS be entered and considered prior to the issuance of any further action on this application.

Conclusion

It is respectfully submitted that the present application is in a condition for allowance and should be allowed.

If any fee should be due for this amendment or extension of time, please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

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